

## WHAT IS CLAIMED IS:

## 1. Glass comprising:

Ingredient	wt. %
SiO <sub>2</sub>	67 – 75 %
Na <sub>2</sub> O	10 – 20 %
CaO	5 – 15 %
MgO	0 – 5 %
Al <sub>2</sub> O <sub>3</sub>	0 – 5 %
K <sub>2</sub> O	0 – 5 %
total iron (expressed as Fe <sub>2</sub> O <sub>3</sub> )	0.01 to 0.30 %
erbium oxide	0.01 to 0.30 %
cerium oxide	0.005 to 0.30 %

wherein the glass has visible transmission of at least 75%, a transmissive a\* color value of -1.0 to +1.0, and a transmissive b\* color value of -1.0 to +1.5.

## 2. The glass of claim 1, wherein the glass comprises:

total iron (expressed as Fe <sub>2</sub> O <sub>3</sub> )	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %
cerium oxide	0.01 to 0.18 %.

## 3. The glass of claim 2, wherein the glass comprises:

total iron (expressed as Fe <sub>2</sub> O <sub>3</sub> )	0.03 to 0.15 %
erbium oxide	0.03 to 0.13 %
cerium oxide	0.03 to 0.12 %.

4. The glass of claim 1, wherein the glass further comprises from 0.005 to 0.15% neodymium oxide.
5. The glass of claim 4, wherein the glass further comprises from 0.010 to 0.050% neodymium oxide.
6. The glass of claim 1, wherein the glass has a redox value ( $\text{FeO} / \text{Fe}_2\text{O}_3$ )  $\leq$  0.20.
7. The glass of claim 1, wherein the glass has a redox value ( $\text{FeO} / \text{Fe}_2\text{O}_3$ )  $\leq$  0.15.
8. The glass of claim 1, wherein the glass has a redox value ( $\text{FeO} / \text{Fe}_2\text{O}_3$ )  $\leq$  0.13.
9. The glass of claim 1, wherein the glass further comprises less than or equal to 0.020 % FeO.
10. The glass of claim 1, wherein the glass further comprises less than or equal to 0.015 % FeO.
11. The glass of claim 1, wherein the glass further comprises less than or equal to 0.011 % FeO.
12. The glass of claim 1, wherein the glass has a visible transmission of at least 80%.

13. The glass of claim 1, wherein the glass has a visible transmission of at least 85%.

14. A method of making glass, the method comprising:  
providing a glass batch comprising:

Ingredient	wt. %
SiO <sub>2</sub>	67 – 75 %
Na <sub>2</sub> O	10 – 20 %
CaO	5 – 15 %
MgO	0 – 5 %
Al <sub>2</sub> O <sub>3</sub>	0 – 5 %
K <sub>2</sub> O	0 – 5 %
total iron (expressed as Fe <sub>2</sub> O <sub>3</sub> )	0.01 to 0.30 %
erbium oxide	0.01 to 0.30 %
cerium oxide and/or a nitrate	0.005 to 2.0 %
neodymium oxide	0 to 0.15 %

melting the batch and forming a resulting glass that has visible transmission of at least 75%, a transmissive a\* color value of -1.0 to +1.0, and a transmissive b\* color value of -1.0 to +1.5.

15. The method of claim 14, wherein the nitrate comprises at least one of potassium nitrate (KNO<sub>3</sub>) and sodium nitrate (NaNO<sub>3</sub>), and the batch comprises:

total iron (expressed as Fe <sub>2</sub> O <sub>3</sub> )	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %

cerium oxide	0.01 to 0.18 %
neodymium oxide	0 to 0.15 %.

16. The method of claim 14, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.20$ .

17. The method of claim 14, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.15$ .

18. The method of claim 14, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.13$ .

19. The method of claim 14, wherein after the melting the glass comprises less than or equal to 0.020 % FeO.

20. The method of claim 19, wherein the glass comprises less than or equal to 0.015 % FeO.

21. The method of claim 20, wherein the glass comprises less than or equal to 0.011 % FeO.

22. The method of claim 14, wherein the glass has a visible transmission of at least 80%.

23. Glass comprising:

total iron (expressed as $\text{Fe}_2\text{O}_3$ )	0.01 to 0.30 %
erbium oxide	0.01 to 0.30 %
cerium oxide	0.005 to 0.30 %.

24. The glass of claim 23, wherein the glass has visible transmission of at least 75%, a transmissive  $a^*$  color value of  $-1.0$  to  $+1.0$ , and a transmissive  $b^*$  color value of  $-1.0$  to  $+1.5$ .

25. The glass of claim 23, wherein the glass comprises:

total iron (expressed as $\text{Fe}_2\text{O}_3$ )	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %
cerium oxide	0.01 to 0.18 %.

26. The glass of claim 23, wherein the glass comprises:

total iron (expressed as $\text{Fe}_2\text{O}_3$ )	0.03 to 0.15 %
erbium oxide	0.03 to 0.13 %
cerium oxide	0.03 to 0.12 %.

27. The glass of claim 23, wherein the glass further comprises from 0.005 to 0.15% neodymium oxide.

28. The glass of claim 23, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.15$ .

29. The glass of claim 23, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.13$ .

30. The glass of claim 23, wherein the glass further comprises less than or equal to 0.015 %  $\text{FeO}$ .

31. The glass of claim 23, wherein the glass has a visible transmission of at least 85%.

32. A method of making glass, the method comprising providing a glass batch comprising:

total iron (expressed as $\text{Fe}_2\text{O}_3$ ):	0.01 to 0.30 %
erbium oxide:	0.01 to 0.30 %
cerium oxide and/or a nitrate:	0.005 to 2.0 %, and

using the glass batch to make glass.

33. The method of claim 32, wherein the batch comprises a nitrate in the amount (wt. %) of from 0.005 to 2.0%.

34. The method of claim 33, wherein the nitrate comprises at least one of potassium nitrate ( $\text{KNO}_3$ ) and sodium nitrate ( $\text{NaNO}_3$ ).

35. The method of claim 34, wherein the batch comprises at least one of potassium nitrate ( $\text{KNO}_3$ ) and sodium nitrate ( $\text{NaNO}_3$ ) in a total amount of from 0.2 to 1.5%.

36. The method of claim 32, wherein the glass has visible transmission of at least 75%, a transmissive  $a^*$  color value of  $-1.0$  to  $+1.0$ , and a transmissive  $b^*$  color value of  $-1.0$  to  $+1.5$ .

37. The method of claim 32, wherein the glass comprises:

total iron (expressed as $\text{Fe}_2\text{O}_3$ )	0.02 to 0.20 %
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erbium oxide	0.02 to 0.20 %
cerium oxide	0.01 to 0.18 %.

38. The method of claim 32, wherein the glass comprises:

total iron (expressed as $\text{Fe}_2\text{O}_3$ )	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %
neodymium oxide	0 to 0.15 %.

39. The method of claim 32, wherein glass comprises from 0.005 to 0.15% neodymium oxide.

40. The method of claim 32, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.15$ .

41. The method of claim 32, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.13$ .

42. The method of claim 32, wherein the glass further comprises less than or equal to 0.015 % FeO.

43. The method of claim 32, wherein the glass has a visible transmission of at least 85%.

44. Glass comprising:

total iron (expressed as $\text{Fe}_2\text{O}_3$ )	0.01 to 0.30 %
erbium oxide	0.01 to 0.30 %.

45. The glass of claim 44, further comprising:
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|--|-----------------|
| total iron (expressed as $\text{Fe}_2\text{O}_3$ ) | 0.02 to 0.20 %  |
| erbium oxide                                       | 0.02 to 0.20 %. |
46. The glass of claim 44, further comprising:
- |  |                 |
|--|-----------------|
| total iron (expressed as $\text{Fe}_2\text{O}_3$ ) | 0.03 to 0.15 %  |
| erbium oxide                                       | 0.03 to 0.13 %. |
47. The glass of claim 44, further comprising from 0.005 to 0.15 % neodymium oxide.
48. The glass of claim 44, further comprising from 0.010 to 0.050 % neodymium oxide.
49. The glass of claim 44, further comprising from 0.005 to 0.30% cerium oxide.
50. The glass of claim 44, wherein the glass has visible transmission of at least 75%, a transmissive  $a^*$  color value of  $-1.0$  to  $+1.0$ , and a transmissive  $b^*$  color value of  $-1.0$  to  $+1.5$ .
51. The glass of claim 50, wherein the glass has a visible transmission of at least 85%.
52. The glass of claim 44, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.15$ .

53. The glass of claim 44, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.13$ .

54. The glass of claim 44, wherein the glass further comprises less than or equal to 0.015 % FeO.

55. The glass of claim 44, further comprising:

$\text{SiO}_2$	67 – 75 %
$\text{Na}_2\text{O}$	10 – 20 %
$\text{CaO}$	5 – 15 %
$\text{MgO}$	0 – 5 %
$\text{Al}_2\text{O}_3$	0 – 5 %
$\text{K}_2\text{O}$	0 – 5 %.

56. Glass comprising:

neodymium oxide	0.005 to 0.15%, and
erbium oxide	0.01 to 0.30 %.

57. The glass of claim 56, further comprising:

total iron (expressed as $\text{Fe}_2\text{O}_3$ )	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %.

58. The glass of claim 56, further comprising from 0.005 to 0.30% cerium oxide.

59. The glass of claim 56, wherein the glass has visible transmission of at least 75%.

60. The glass of claim 59, wherein the glass has a transmissive  $a^*$  color value of  $-1.0$  to  $+1.0$ , and a transmissive  $b^*$  color value of  $-1.0$  to  $+1.5$ .

61. The glass of claim 56, wherein the glass has a visible transmission of at least 85%.

62. The glass of claim 57, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.15$ .

63. Glass comprising:

total iron (expressed as $\text{Fe}_2\text{O}_3$ )	0.01 to 0.30 %
neodymium oxide	0.005 to 0.15 %.

64. The glass of claim 63, further comprising

total iron (expressed as $\text{Fe}_2\text{O}_3$ )	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %.

65. The glass of claim 63, further comprising from 0.005 to 0.30% cerium oxide.

66. The glass of claim 63, wherein the glass has visible transmission of at least 75%, a transmissive  $a^*$  color value of  $-1.0$  to  $+1.0$ , and a transmissive  $b^*$  color value of  $-1.0$  to  $+1.5$ .

67. The glass of claim 63, wherein the glass has a visible transmission of at least 85%.

68. The glass of claim 63, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.15$ .
69. The glass of claim 63, wherein the glass further comprises less than or equal to 0.015 % FeO.
70. The glass of claim 63, further comprising:
- |                         |           |
|-------------------------|-----------|
| $\text{SiO}_2$          | 67 – 75 % |
| $\text{Na}_2\text{O}$   | 10 – 20 % |
| $\text{CaO}$            | 5 – 15 %  |
| $\text{MgO}$            | 0 – 5 %   |
| $\text{Al}_2\text{O}_3$ | 0 – 5 %   |
| $\text{K}_2\text{O}$    | 0 – 5 %.  |
71. The glass of claim 1, wherein the glass has a visible transmission of at least 90% when having a reference thickness of from 5.5 to 5.6 mm.
72. The glass of claim 23, wherein the glass has a visible transmission of at least 90% when having a reference thickness of from 5.5 to 5.6 mm.
73. The glass of claim 44, wherein the glass has a visible transmission of at least 90% when having a reference thickness of from 5.5 to 5.6 mm.
74. Glass comprising:
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|--|----------------|
| total iron (expressed as $\text{Fe}_2\text{O}_3$ ) | 0.01 to 0.10 % |
| cerium oxide                                       | 0.01 to 0.18 % |
- wherein the glass has a visible transmission of at least 85%, a transmissive  $a^*$  color value of  $-1.0$  to  $+1.0$ , and a transmissive  $b^*$  color value of  $-1.0$  to  $+1.5$ .

75. The glass of claim 74, wherein the glass has a redox value ( $\text{FeO}/\text{Fe}_2\text{O}_3$ )  $\leq 0.15$ .
76. The glass of claim 74, further comprising from 0.02 to 0.20 % erbium oxide.
77. The glass of claim 74, wherein the glass was made using a batch comprising from 0.005 to 2.0 % of nitrate.
78. The glass of claim 77, wherein the nitrate comprises  $\text{NaNO}_3$ .